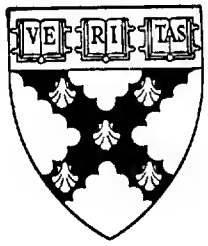
The New Science of Records Management

By ROBERT A. SHIFF and ARTHUR BARCAN



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From *In This Issue*

Robert A. Shiff and Arthur Barcan

Industry today is spending a lot of money on paper work; one expert has estimated that it costs 20 cents to "create" one piece of business paper, and a penny a year to maintain it. The National Records Management Council, of which Robert A. Shiff is Executive Director and Arthur Barcan is Vice President, has been pioneering in developing answers to this problem.

In *The New Science of Records Management* Shiff and Barcan set forth some of the controls which both large and small companies can use to reduce the appalling waste in record making and record keeping (the authors estimate that 65 cents of every dollar spent to house records is money down the drain), improve efficiency, and meet the need for better business histories. Standards, costs, and legal requirements are also discussed in detail.

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ARTICLES

FEATURES

The New Science of Records Management

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By Robert A. Shiff and Arthur Barcan

Paper work has turned into one of the costliest activities of business. It has become a serious drain on both budgets and efficiency. When scientific controls for paper work are lacking — as they are in most companies — an average of 65 cents of every dollar spent to house records is money down the drain; in other words, record keeping is only 35% efficient. Moreover, the amount of paper snowballs into an unwieldy mass that strains every storage facility. The inevitable result is that executives find it increasingly difficult to get needed information from the records hoard.

This situation has caught the modern businessman unprepared. His predecessor of 75 years ago could keep his records under his hat or on his cuff. If a subordinate needed to know how or why, he had only to ask the boss — in many cases, the founder of the company. With the expansion of industrial and government activity and the introduction of office machines in World War I and after, paper work grew enormously in bulk, but most executives still regarded it only as a ncccssary nuisance, the inevitable concomitant of progress. Now, by speeding up clerical operations to a fantastic degree, developments in electronic equipment are threatening to inundate business under a flow of paper that will make its previous accumulations of records look like drops in the bucket. A realistic approach to the problem cannot be postponed any longer.

Fortunately for the company that wants to do something about this situation, a number of pioneers in records management have been quietly assembling an organized body of knowledge about records. They have been observing, doing research, testing their ideas, validating their conclusions, and putting into working order the "pilot" installations of new records systems. They have demonstrated that industry can accomplish results like the following:

Only 12 weeks after the Columbia Broadcasting System put a controlled record-keeping program in operation, its savings totaled $41,000. The 33 million pieces of paper previously crammed into its offices and files had been cut almost in half; 40 tons of paper had been carted away and sold as waste.

Shrinkage of the records accumulation was only part of the story. CBS had, for the first time, a planned program of continuing records control. It had a current index pinpointing every record in every location. It knew what records to keep, and why, how long to keep them, and where. Its personnel could easily make maximum use of the information stored in the records.

Suppose that a conscientious executive wanted to do more than deplore his creaking records system. Suppose that he wanted to duplicate in his own company (and it could be a large firm or

a small one) the achievement of CBS. Where should he begin? What should he do? How could he do it? What results should he aim for? We shall discuss the answers to these and other questions in the pages that follow, drawing in large part on the wide and unique experience of the National Records Management Council, with which the authors are associated.

NRMC is a nonprofit organization established in 1948 with the aid of a grant from the Rockefeller Foundation. It has had the advantage of working in cooperation with such organizations as the Kellogg Foundation, the American Historical Association, the Economic History Association, the Business Historical Society, and the Society of American Archivists as well as leading universities; also, its program has been administered by a board of directors consisting of businessmen, archivists, and historians. NRMC's work has now progressed to a point where we can draw accurate outlines of the new and helpful science of records management.

Gains in Efficiency

The science of records management encompasses three areas:

1. *Records "birth control,"* which prevents unnecessary forms and reports from coming into being, and limits record making to what is essential for effective operations.

2. *Record-keeping controls*, which destroy the papers that have outlived their usefulness, and insure easy reference to and location of required records.

3. *Record-processing controls*, which streamline the system, cut costs, and improve the quality of required paper work.

In each of these areas there has been a good deal of research and experimentation leading to objective standards and exact procedures. Moreover, it has become possible to forecast accurately just what results can be attained by applying scientific controls.

International Textbook Case

To illustrate what can be done, let us take the case of the International Textbook Company. Last August, the company's management asked the National Records Management Council two questions: (1) Did the International Textbook Company have a records problem? (2) If so, what action was necessary?

After a preliminary survey the Council reported to management as follows:

"Our measurement of your company's records keeping totaled 8,227 cubic feet of records, or the equivalent of 5,140 standard-size file drawers occupying over 7,500 square feet of office and storage space. This is an estimated 20,550,000 pieces of paper."

The audit report went on to estimate the *records improvement index* (percentage of records to be destroyed or transferred to low-cost storage) at 65% to 75%; and the *space utilization ratio* (ratio of cubic feet of records to square feet of floor area occupied by files) at 1.1 to 1, or about one-third of full efficiency.

Guided by these estimates, the audit concluded: "Lack of a sound and clearly defined records retention schedule has caused a backlog of records in offices and storage areas, with resultant uncertainty as to what records may be destroyed, transferred to storage or microfilmed. . . . The application of scientific records controls will result in these benefits:

"1. Release 20% of the office space in which records are currently stored; also release many current records storerooms.

"2. Eliminate the need for new filing cabinets and restrict the number already in use.

"3. Increase the utilization of storage space for records from the existing ratio of 1.1 cubic feet of records per square foot to the standard of 3½ cubic feet to each square foot."

As a result of the study, International Textbook now has a controlled record-keeping program. Let us compare the results that were actually achieved with the predictions:

Prediction	*Result*
65%–75% turnover	72.9% turnover (32.9% destroyed, 40% transferred to records center)
20% of office space to be released	22% (2,826 square feet) of space released
Release of many storage areas	Areas with a rental value of $2,342 released
Release of equipment	145 file cabinets released (plus portions of other equipment)
Greater utilization of storage space	8,588 cubic feet of records (potential capacity) stored in 2,450 square feet of space — a new ratio of 3.5 to 1 as compared to the old of 1.1 to 1

Company Size Immaterial

The International Textbook Company is by no means an isolated example of what can be

gained from the application of scientific controls to paper-work problems that have haunted industry and government since the turn of the century. Case after case can be cited showing similar improvements. There is no significant difference in results between large companies and small companies, between private enterprise and local, state, or federal government agencies. The government does not have any monopoly on unnecessary paper work, and a small company can be as badly snarled in red tape as a large organization.

Some representative organizations that have adopted scientific records management with NRMC help and the results obtained as measured by the *records improvement index* are shown in EXHIBIT I.

EXHIBIT I. GAINS FROM SCIENTIFIC RECORDS MANAGEMENT AT TYPICAL INSTALLATIONS

Organization	Records destroyed	Records transferred to new records center	Total: records improvement index
City of New York (pilot installation)	47%	26%	73%
Columbia Broadcasting System	46	21	67
Electric Storage Battery Company	23	27	50
El Paso Natural Gas Company	28	37	65
Hamilton Standard Division (United Aircraft Corporation)	20	33	53
Irving Subway Grating Company	69	7	76
Reaction Motors Company	9	69	78
Scott Paper Company	44	21	65

Professional Standards

In some quarters there is a tendency to deprecate records management as a science, to feel that effective records control requires no more than good intentions and common sense. To be sure, common sense may dictate that a records system be kept in order; good intentions may motivate willing workers. But the gap between intent and accomplishment cannot be bridged without knowledge. There is no "handy home guide" that a well-meaning executive can follow to streamline his records and reduce costs. Only professional standards, research, and tested experience can provide him with a solid base for making his decisions and choosing the approach which seems best suited to his company's or agency's needs.

Dealing with Specialists

It is because records management has become a science that management will ordinarily find itself dealing with specialists in the course of developing controls for paper work. One of the most critical junctures in a program occurs when the specialists come to management with their proposals. Just what should management expect of them?

Goal and Timetable. In the first place, if a proposed program is backed by research and experience, management should expect a "balance sheet" of what the program will accomplish and what it will cost. It needs intelligent answers *in advance* to these questions:

- What are the specific objectives of the proposed program?
- What kind of work does it involve?
- How long will it take?
- How much will it cost?
- Who will do it?
- What tangible benefits will result?

If these questions cannot be answered fully and satisfactorily, management would have reasonable doubts about the reliability of the proposed program.

Practical Demonstration. Secondly, management should be certain that the core of the suggested program is an actual installation, a going records system approved and understood by the people who will work with it. It is easy for an outsider to come in and state that a records system needs repairs, that it is confused, unwieldy, difficult to use. Likewise, it is easy to write a report to management recommending that paper work be simplified and systems reorganized. It is quite another thing actually to effect the lower cost and higher quality that mark an efficient records system.

Continuing Control. Finally, the proof of a sound program is the extent to which an organization can carry on successfully after the specialists have departed.

Records management is not a one-shot operation, over and done with as soon as the system has been overhauled and rehabilitated. The new paper-work controls should insure *continuing* efficiency, *continuing* cost reduction. If the

beneficial effects of records reform last about as long as a New Year's resolution, something is wrong. A healthy program includes not only instructions on current operations but also preparation and education of company personnel so that they themselves can adjust the program to future needs.

Quantity of Records

One of the key questions for management is: How many records, how much paper in our files, *should* we have? The answer is important not only in determining the need for a program but in appraising the proposals of the specialists.

Naturally, an organization's need for records depends somewhat on individual circumstances, and even within the same industry or field of work there will be differences. However, certain "rule of thumb" ratios have been worked out on the basis of past experience and research which executives can use as professional standards subject to local variation (note that 1 cubic foot of records is equivalent to about 2,000 pieces of paper):

Industrial operations (textile plant, aircraft factory, etc.)	1 cubic foot of records for each employee on the payroll
Government agencies or companies subject in detail to government regulations (public utility, airline, etc.)	5 cubic feet of records for each employee on the payroll
Specialized clerical operations (accounting, purchasing office, etc.)	10–15 cubic feet of records for each employee on the payroll

Operating and Installation Costs

What are the costs of keeping and maintaining records under scientific controls? The savings over conventional systems are striking. As a professional standard, a model records center with prompt reference service need cost only $0.75 to $0.90 per cubic foot for a year. (These figures include costs of personnel, space, and equipment.) Compare this with the typical cost of maintaining records in the office, which is $7.50 per cubic foot per year, and with the average storage costs of conventional company systems, which is $3.00 per cubic foot per year, and the magnitude of savings becomes readily apparent.

But what about the costs of establishing scientific paper-work controls? The following figures, representing the approach of NRMC to the assignments which it undertakes, should give management an idea of how modest the total outlay can be:

- The *audit* or survey ordinarily requires two or three days. There is a charge of $80 per person per day, plus travel expenses. There is no additional fee. The total cost does not ordinarily run above $240.

- The *installation of new controls* (including the education of company personnel) is done on a fixed-fee basis. The fee averages about $50 a day per specialist. The number of specialists assigned to the job and the time required varies for obvious reasons. In the case of one large manufacturing company, the installation required the full-time services of two specialists and the half-time services of a third for six months. In the case of another large company, the job required the full-time services of two specialists for slightly less than three months.

Quality Control

Virtually every clerical operation (typing, invoicing, punching cards, and so on) these days is a double-cost setup: first, the piece of paper is produced; secondly, it is checked. This not only is very expensive, but does nothing to prevent future errors.

One of the impressive features of scientific records management is quality control. Records can be maintained in better shape with less inspection by selecting only that portion of the clerical product which needs verification — *when* it is needed, and to the minimum *extent* needed. Experience has firmly established that 100% inspection does not result in 100% quality. On the contrary, research indicates that 100% inspection frequently fails because of fatigue, boredom, and distraction. Quality control results not only in greatly reducing the number of full-time inspectors while improving the condition of the files, but also, in some cases, in enabling effective control on a part-time basis.

Furthermore, it will soon be possible, as a result of research now in progress, to tell management in a matter of days what the quality level of its recordkeeping is and what it should be, and what maintaining quality costs in comparison to what it should cost.

Business History

Business history is a little-publicized branch of records management; yet it is extremely important from the viewpoint of both executive and historian. The historian obviously is concerned with source material to be analyzed, interpreted,

and woven into an objective account of the economic and political scene. The executive, on the other hand, is interested in the business record as the memory of his organization. Good records of a company's experience, of the achievements and the failures of its people, are a corporate asset. They provide invaluable background material, explaining why and how decisions were made, and they also serve as administrative guides and references.

The necessity for keeping vital records and not tossing away every piece of paper in an excess of housekeeping zeal is well illustrated by the embarrassing plight of one of the largest banks in the world. Engaged in an antitrust suit with the government several years ago, bank officials were forced to go, hat-in-hand, to the government and ask for copies of their own records to prepare their defense. The bank's original records had been destroyed.

In addition, historical records supply excellent material for advertising and public relations, and can be used to cement the bond between management and stockholders. Interestingly enough, the evidence reveals that in many cases companies pay as much for an inadequate "puff" story, in book or article form, as for a sound professional history. Yet the "puff" story carries no weight outside the company and serves no purpose as an administrative reference inside the company.

Only about 1% of a company's records can properly be termed "permanent records." The problem, therefore, is not how much is significant but what is significant. What kind of records should be preserved as of lasting historical and administrative worth? Particular care should be taken to select material that highlights *why* things were done, rather than just the usual data on what happened or how it happened. In fact, the biggest gap in business records generally is the answer to the question *why*.

A major task of records management is to train industry to create and maintain "one file drawer" of business history every year; that is about all it takes to make room for films, recordings, samples, drawings, and the like, along with written and printed documents. Here are some of the records that research has flagged as suitable for this purpose:

General Records

Minute books and basic legal records such as charters and franchises.
Executive correspondence on policy matters.
Special or annual reports to directors or stockholders.

Operating Department Records

Special reports on analyses.
Charts of plant layout, sample schedules, etc.
Photographs or drawings of the product.
Sample payrolls and statistical summaries.

Advertising and Sales Records

Summary sales statistics.
Samples of labels, packages, price lists, schedules, etc.
Samples of different types of advertising.
Special studies on advertising results.

Specialized Equipment

Mechanical devices and equipment are used at all stages of the paper-work operation and are essential to the development of professional standards of records management.

Obviously it is important to know the equipment to be purchased — how various makes and models differ in price and performance. Whether company personnel have the opportunity to check on installations in other organizations and to go through all the steps required by a thorough investigation, or whether they must depend on outside assistance, the important thing is to assemble as complete and objective information as possible.

Take the matter of microfilming, which is now an old story as a way to save time and space and to protect valuable documents. The figures in EXHIBIT II show what a wide range of choice in equipment there is for different needs and suggest the form into which the information can be put for ready comparison and analysis.

Or take the facsimile transmission of records. Recently developed equipment makes use of the photoelectric cell principle to transmit drawings, charts, pictures, and typed or printed matter across miles in a matter of minutes. This equipment opens up new possibilities for decentralized filing systems; they can now be located "down the hall" or 15 miles away. Equipment is put out by seven manufacturers in the United States and England. As an example of the kind of objective, analytical approach needed, here is a checklist for comparing specifications and performance, which NRMC worked out for its own use :

Operating Features

Material for transmission
Document transmission sensitivity
Maximum scanned area
Scanning rate
Transmission time
Communication distance
Circuit privacy
Duplication processes
Operator training required
Legibility of copy

	Costs
Transmitter (purchase or rental)	Circuit charges
	Installation charges
Receiver (purchase or rental)	Recording paper charges

Administrative Decisions

While there are some problems of records management which company executives can delegate to specialists, there are other decisions which they must make themselves. These decisions often come up in connection with the installation of a new records program, the question of how long to keep the records, and the integration of the various systems and methods of records management.

Installation

Scientific records management usually means new methods, processes, and systems. Installing them may be a simple matter involving changes only in the way things are done, or it may necessitate new machinery and facilities. In either case, executives in charge of the operation will ordinarily need to choose between different alternatives. There is no "package solution" to a given records problem. The same kinds of considerations usually bear on management's decision as in the case of other problems — for example, the allocation of scarce resources. The following case is illustrative:

> Two years ago, as part of its records control program, Oneita Knitting Mills cut down on its record making by designing a new form — a single form that performed all these functions:
>
> Acknowledged the order from the customer.
> Requested information from the customer concerning labels.
> Served as invoice to the customer.
> Served as shipping ticket.
> Provided manufacturing specifications to the plant.

Recognizing the need for consolidating forms was simply a matter of common sense. But designing a suitable form required specialized knowledge, and deciding whether to use multilith, master stencil, spirit master, or a multicarbon record required judgment. Thus, in comparing the four alternative processes, relative weights had to be assigned to cost, speed, quality of reproduction, and so on; and then these had to be balanced against the fact that the company already had a multilith machine with personnel trained to operate it. This was obviously not a task that fit into a formula.

EXHIBIT II. USEFUL INFORMATION FOR SELECTION OF 16 MM. MICROFILM CAMERAS

	Document size						
	5" × 3"	*6" × 4"*	*8" × 5"*	*9" × 6"*	*Check*	*8½" × 11"*	*8½" × 14"*
Kind of feed	Automatic	Automatic	Automatic	Automatic	Automatic	By hand	By hand
Suggested reduction ratio	24–40/1	24–40/1	24–40/1	24–40/1	24–40/1	17–24/1	17–24/1
Average images per hour	2,500	2,500	2,000	2,000	3,000	500	500
Equipment purchase cost	$450–$3,300	$450–$3,300	$450–$3,300	$450–$3,300	$450–$3,300	$450–$3,300	$450–$3,300
Personnel cost per image	$0.0009	$0.0008	$0.0010	$0.0010	$0.0006	$0.0070	$0.0070
Total cost per image*	$0.0014	$0.0014	$0.0021	$0.0021	$0.0015	$0.0160	$0.0160
Rental cost of equipment (per month)†	$37–$76	$37–$76	$37–$76	$37–$76	$37–$76	$37–$76	$37–$76

* Cost of developer and paper.
† Alternative to purchase.
SOURCE: National Records Management Council, Technical Information Service.

Retention of Records

Once the record-making processes are established, the question arises: How long should the

EXHIBIT III. RECORDS RETENTION SCHEDULES REQUIRED BY FOUR FEDERAL AGENCIES

(In years unless otherwise noted)

Record	*Federal Communications Commission*	*Interstate Commerce Commission*	*Federal Power Commission*	*Civil Aeronautics Board*
Payroll registers	10	10	10	6
Vouchers				
Plant	Permanent	Permanent	Permanent	Permanent
Other	10	15	10	6
Accounts receivable	....	10	10	6
Accounts payable	....	....	....	6
Bank deposit books	1	6	1	Bank reconciliation + 3 months
Purchase orders	6	3	6	3
Clock cards	3	3	Optional after transfer to other records	3
Materials and supplies	3	6	3	3
Engineering records	Completion + 10	....	Completion + 6	Completion + 6
Personnel folders	Optional	5	Termination + 3	Termination + 2

records be kept? Here again judgment should be used. However, no intelligent decision can be made on whether or not a specific record should be kept — and for how long and where — without having reliable and comprehensive information on (a) the legal requirements, (b) comparable company data, and (c) the company's own experience.

¶ *Legal requirements* — Assembling data on all legal requirements to answer individual company needs is a huge but straightforward job. The National Records Management Council now has in its files the complete index to every federal record-keeping requirement. (It has not yet established guides for both federal and state legislation on records.) EXHIBIT III graphically indicates the variance in retention periods required by different federal agencies for the same type of record.

¶ *Comparable company data* — In addition to abiding by the law, companies, like individuals, very often conduct themselves the way their neighbors do; they follow the customs. So it is useful to know what other companies are doing. (The NRMC maintains a complete file of comparable company data from controlled record-keeping installations.) However, such information should be used as only *one* of the guides for assisting management in deciding on records retention; and it must be kept in mind that when compiled on a broad scale, as by a business or professional association, it may reflect what is being done rather than what should be done. The fact that three authoritative banking groups differ widely on the records retention schedules that they recommend, as shown in EXHIBIT IV, indicates the necessity for taking the pattern of any other organization, even in the same line of business, with a grain of salt.

EXHIBIT IV. RECORDS RETENTION SCHEDULES DRAWN UP BY THREE BANKING GROUPS

Name of record	*New York Bankers Association*	*Washington Bankers Association*	*National Association of Bank Auditors and Controllers*
Personnel			
Attendance records	4–10 years (for time record card)	5 years after leaving service	10 years
Employee applications	10–25 years after leaving service	.....	Permanently (unsuccessful applications optional)
Commercial deposits			
Deposit tickets	12–20 years	7 years	15 years
Trial balances	Until purpose is served	3 months–2 years	6 months
Loans and discounts			
Loan applications	3–10 years	Until purpose is served	Optional
Note of discount tickler	2–12 years	10 years	2 years

¶ *Company's own experience* — Legal requirements and comparable company data are not sufficient in themselves. They must be weighed against the company's own administrative experience. There may be, for example, a six-year statute of limitations on cases involving accounts receivable. In actual practice, management may decide to take a calculated risk, to discard the records in question after two, three, or four years. Or it may break down the records by size of order and dispose of material relating to orders under $25 after two years, orders under $50 after three years, and so forth.

The above discussion applies mainly to records with legal overtones. There are many other records that have no connection with statutes or regulations. In these cases, studies of actual usage — that is, the frequency with which reference is made to records and the purpose of such reference — point the way to developing a tight retention schedule both for office and for storage.

In any event, no intelligent decision about the disposition of a record can be made until all three factors we have mentioned have been taken into account. Applying a "canned" solution to the particular problems at a particular company may give some results but will not realize the full potential of scientific records management.

Integration

In taking an objective, realistic view of paper work, records management studies and treats it as a whole, as an integrated operation. Only when all operations involving a piece of paper, from its creation to its disposal, are coordinated, does the paper work proceed from beginning to end as smoothly and evenly as a product moving along the assembly line. Indeed, the ideal is a continuous flow from start to finish, without unnecessary and costly delays and reworking.

Compartmentalized, disjointed paper work breeds duplication and layering of operations — which, in turn, breed needlessly high costs. A plant engineer would be pained by the idea of a nut being screwed into place by one worker on the line, then loosened and screwed in again by two more operators. Yet this sort of thing is common in paper-work processing, because the flow of paper from creation through processing to disposal is not viewed in its entirety.

The experience of the Department of Welfare in the City of Detroit illustrates the possibilities for achieving "better records at lower costs" when the paper-work operation is considered as an indivisible whole. Although this was a program for a municipal government, it is typical of what can be achieved by a scientific approach in any organization. The steps of the program set

EXHIBIT V. RECORDS PROGRAM OF DETROIT DEPARTMENT OF WELFARE

Techniques	*Results*
A. RECORDS "BIRTH CONTROL"	
1. Design and consolidate forms.	1. Elimination of filing in current folders of over 140,000 pieces of paper a year.
2. Develop "correspondex" form letters and pattern paragraphs.	2. Elimination of typing 20,000 letters a year.
3. Develop guides on papers to be created and filed.	3. Elimination of dictating into 20,000 cylinders a year.
B. RECORD-KEEPING CONTROLS	
1. Inventory and appraise all records in office and storage	1. Release of $2,625 worth of space (2,100 square feet).
2. Establish "timetable" (records schedule) on how long and where to keep each type of record.	2. Release of $5,000 worth of filing equipment.
3. Design new records-center operations.	3. Some 25 tons of records scheduled for sale as wastepaper.
	4. Indexing and prompt reference to all records.
C. RECORD-PROCESSING CONTROLS	
1. Streamline paper work in opening and closing cases.	1. Elimination of posting and filing 10,000 registration cards a year.
2. Develop guides to improve maintenance and use of case folder.	2. Development, for the first time in social work, of a functional case folder to point up the status and history of each case.
3. Establish quality control of social work operations.	3. Highlighting actual and potential sources of error, and providing measurable guides on actual quality performance by both clerical and social workers.

up as a result of the initial audit, with results achieved, are shown in EXHIBIT V.

Conclusion

Records management has come of age as a practical science designed to help industry and government. It is demonstrating capacity to improve paper-work operations by adding to standards of quantity, cost, and quality; and it is filling the need for better business histories. Every alert administrator who has not already done so will want to investigate its potentiality for his own organization.

ALL records are made by human beings and read by human beings. Differences in personalities naturally affect record-keeping systems. In order to achieve maximum usefulness, a person designing a report must remember the strong points, the weak points, and the prejudices of the man or men who will read it. Also, the human weaknesses of those who make out the report should be kept in mind. . . .

The personalities involved . . . affect the form of the records more than they affect the number of records. . . . It is altogether proper that these forms should vary from company to company. The purpose of a record-keeping system is not to please experts but to present facts in understandable form to the individuals who are to use them. Since no two minds work exactly alike, a form which is best for one person may not be best for another. As long as variations in the reports and records stay within the bounds dictated by common sense, each company can profit by concentrating on getting the facts across rather than adhering rigidly to standard forms. . . .

Inevitably there is no sharp borderline between mental and written control but rather a broad area in which either may be used. For the benefit of those who are wondering whether a certain type of information should be in written form, a few criteria are listed:

1. *Inefficiency.* Records should be used when it is obvious that waste motions are resulting from mental or visual control. If men or machines, for instance, are frequently idle, a written schedule may be the answer.
2. *Inaccuracy.* When it is noticed that the information obtained verbally or mentally is not sufficiently accurate, it may mean that the stage has been reached where records are necessary.
3. *Lack of Time.* When the executive finds that he has not had sufficient time to look up certain information himself, it may be a signal that the information should be sent to him in the form of a report.
4. *Forgetfulness.* When lapses of memory concerning orders or information start to become frequent, written records may be required.

Under any circumstances, records should be kept to obtain certain definite information, not for the sake of keeping records. An alert management does not endeavor to set up a cost accounting system; it tries to find out what the costs are. For this reason, standard systems have a limited application for manufacturers, except in the bookkeeping work and, to a lesser extent, in inventory control.

Paul F. Lawler, *Records for the Control of Growing Manufacturing Enterprises*
Boston, Division of Research, Harvard Business School, 1947, pp. 36–44.